

## АННОТАЦИИ. КЛЮЧЕВЫЕ СЛОВА. БИБЛИОГРАФИЯ

**Цилюрик А.И., Судак В.М.** Эффективность минимальной обработки почвы под кукурузу в условиях северной Степи Украины / **А.И. Цилюрик, В.М. Судак** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 2(40). – С. 5–9.

Изменение приоритетов развития современного степного земледелия Украины на фоне дальнейшей деградации черноземов обуславливает необходимость совершенствования системы обработки почвы под кукурузу в направлении ее минимизации с учетом типа севооборота, количества и качества пожнивных остатков, удобрения, фитосанитарного состояния посевов, технических возможностей хозяйств. Установлена высокая эффективность применения мелкой мульчированной обработки почвы (чизельной, плоскорезной) и улучшенной системы удобрений ( $N_{60} P_{30} K_{30}$  + послеуборочные остатки предшественника) в технологии выращивания кукурузы, которая не уступает безотвальной пахоте, обеспечивает оптимальные агрофизические показатели, водный и питательный режимы почвы, высокий уровень продуктивности зерна, экономию топлива и максимальный уровень рентабельности производства. Доказано, что минимализация обработки почвы при выращивании кукурузы дает возможность существенно сократить расходы топливно-энергетических ресурсов, в частности при чизелевании на 8,3 л/га, плоскорезном возделывании – 14,8 л/га, с ростом прибыли и уровня рентабельности производства на 9,0–12,6 %.

**Ключевые слова:** кукуруза, минимальная обработка почвы, агрофизическое состояние, влажность почвы, пожнивные остатки, минеральные удобрения, урожайность.

**Ткачук А.П.** Ботанико-морфологические особенности бобовых многолетних трав в зависимости от экологических условий беспокровного сева / **А.П. Ткачук** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 2(40). – С. 10–13.

Отражены ботанико-морфологические различия бобовых многолетних трав: люцерны посевной, клевера лугового, эспарцета песчаного, донника белого, лядвенца рогатого и козлятника восточного в год сева при беспокровном выращивании. Показано различие между исследуемыми травами в особенностях прорастания, наступления и прохождения фазы ветвления, формирования куста трав в первом и втором укосах, особенностях отрастания после скашивания. Первый простой листок образуют эспарцет песчаный, клевер луговой, донник белый и козлятник восточный. В то же время лядвенец рогатый и люцерна посевная формируют первый

сложный лист. Начиная с фазы ветвления бобовых многолетних трав беспокровного сева, происходит пробуждение почек на головке корневой шейки и подземной части стебля. У растений эспарцета песчаного и клевера лугового отрастают листья только из почек на корневой шейке. Из подземных почек развиваются побеги у лядвенца рогатого, люцерны посевной и козлятника восточного. Только растения донника белого развиваются одним центральным стеблем. Установлено, что при беспокровном сева донник белый и козлятник восточный развиваются по озимому типу, а остальные травы – по яровому. После скашивания первого укоса, лядвенец рогатый отрастает с нескошенной надземной части стебля и из почек на подземной части стебля, люцерна посевная отрастает из почек, расположенных на уровне почвы, а также из почек на нескошенной части стебля, эспарцет песчаный и клевер луговой отрастают из почек, расположенных на уровне почвы, донник белый отрастает из почек, расположенных на нескошенной части стебля.

**Ключевые слова:** бобовые многолетние травы, ботанико-морфологические особенности, беспокровное выращивание.

**Пашенко Ю.М.** Сроки сева и густота стояния растений гибридов кукурузы в засушливой Степи / **Ю.М. Пашенко, Н.А. Пашенко, Т.К. Лобко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 2(40). – С. 14–18.

При применении ранних сроков сева растения зацветают и начинают налив зерна в более благоприятных погодных условиях, до наступления жары и засухи. Гибриды Изяслав 220 МВ, ДМС 2510 и Красилков 327 МВ максимальный урожай с низкой влажностью зерна сформировали при посеве 10–13 апреля, ДМС Гроно, ДМК Чери, Визир и Штандарт – с 10 по 30 апреля, а Турия – в третью декаду апреля. Определена оптимальная густота стояния растений гибридов в засушливой Степи.

**Ключевые слова:** кукуруза, гибриды, засуха, сроки сева, густота стояния растений, урожайность зерна.

**Пичура В.И.** Структура гидрогеоморфологической системы для создания геосновы экологического каркаса бассейна реки Днепр / **В.И. Пичура** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 2(40). – С. 19–25.

Представлены результаты применения геоинформационных систем для определения структуры гидрогеоморфологической системы с целью создания геосновы экологического каркаса бассейна реки Днепр.

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Геомоделирование осуществлено на основе цифровой модели рельефа SRTM-90 с применением рабочего модуля Hydrology tools of Spatial Analyst Tools лицензионного программного продукта ArcGIS 10.1. Для водосборной территории Днепра ( $S = 511$  тыс.км<sup>2</sup>) выделено 77,6 суббассейна размером от 1,9 до 22680,2 км<sup>2</sup> IV–IX порядков. На территории бассейна Днепра наиболее часто встречаются суббассейны малых рек с эпизодическим подземным питанием – 68,8 %, малые реки с постоянным – 13,8 %, средние реки – 0,6 %. Установлено, что почти половина длины всех эрозионных форм в пределах бассейна Днепра представлены формами 1-го порядка, а 90 % составляет суммарная длина 1–4 порядков. Рассмотрено понятие “экологический каркас речного бассейна”.

**Ключевые слова:** речной бассейн, гидрогеоморфологическая система, бассейновая организация, река Днепр, экологический каркас, ГИС-технологии, геомоделирование.

**Ткалич Ю.И.** Продуктивность и экономическая оценка выращивания кукурузы при использовании стимуляторов роста и микроудобрений / **Ю.И. Ткалич, О.В. Ткалич, А.В. Кохан** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 2(40). – С. 26–31.

Обоснована хозяйственная и экономическая эффективность применения микроудобрений Оракул, Оракул биоцинк, Оракул мультикомплекс, Оракул коламин бор и стимуляторов роста растений Вымпел, Вымпел-К в инкрустации семян кукурузы и во внекорневой подкормке в разные фазы развития культуры. Показано, что максимальная урожайность достигнута при комплексном использовании препаратов, которое позволяет повысить урожайность кукурузы на 2,3–14,5 % и получить дополнительную прибыль на уровне 445–2764 грн/га в сравнении с контролем.

**Ключевые слова:** кукуруза, стимуляторы роста растений, микроудобрения, урожайность, экономическая оценка, гербициды, сорняки.

**Бенселгуб А.М.** Особенности загрязнения тяжелыми металлами почв города Алжир / **А.М. Бенселгуб, Н.Н. Харитонов** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 2(40). – С. 32–36.

Обсуждается уровень загрязнения почв тяжелыми металлами, что стало общей проблемой больших городов Алжира. В последние годы наблюдается стремительный рост урбанизации и индустриализации, в том числе и города Алжир. Активный рост этого мегаполиса параллельно сопровождается экономическим и социальным прогрессом.

Подчеркивается, что техногенное загрязнение урболандшафтов (размещение отходов, загрязнение атмосферы, почвы и подземных вод) привело к возникновению новых вопросов, связанных с состоянием окружающей среды. Определены особенности поглощения тяжелых металлов почвами, отобранными в г. Алжир. Установлено, что концентрация частиц техногенной пыли в городе Алжир в 1,5–4,0 раза превышает нормы Всемирной организации здравоохранения. Оценка поглотительной способности почв по отношению к тяжелым металлам выполнена путем построения изотерм и определения максимальной поглотительной способности. Согласно с построенными изотермами сорбции почв города Алжир, тяжелые металлы распределены в такой ряд:  $Pb > Cu > Zn > Cd$ .

**Ключевые слова:** почвы, изотермы адсорбции, предельная емкость поглощения, тяжелые металлы, Алжир.

**Бойко В.Б.** Пневмосистема для гидропневматического высевающего аппарата / **В.Б. Бойко, В.А. Улексин, А.П. Сергеев, С.В. Сич** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 2(40). – С. 37–41.

Разработана и построена лабораторная модель гидропневматического высевающего аппарата, использование которого в качестве ручной сеялки требует решить ряд задач, в частности обеспечить сеялку пневматической системой. Приведены результаты исследований агрегатов пневмосистемы для ручной сеялки односемянного высева семян овощных культур с гидропневматическим высевающим аппаратом, а также формулы для инженерного расчета основных параметров пневмосистемы.

**Ключевые слова:** высевающий аппарат, односемянный высев, точный односемянный высев семян, пневматическая система, компрессор.

**Лимонт А.С.** Энергоемкость технических средств приготовления и уборки стланцевой льнотресты / **А.С. Лимонт** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 2(40). – С. 42–46.

Освещена энергоемкость льноуборочного комбайнового агрегата при расстиле ленты льносолумы для ее росяной мочки. Охарактеризована энергоемкость машинно-тракторных агрегатов в составе со вспушивателем и оборачивателем разостланных лент при приготовлении стланцевой льнотресты. Определена энергоемкость использования сдваивателя лент тресты и пресс-подборщика на ее подборе и формировании рулонов льносырья. Приведена энергоемкость погрузчика

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рулонов тресты и тракторно-транспортных агрегатов, которые их транспортируют с поля к местам хранения или первичной обработки льносырья.

**Ключевые слова:** льнотреста, уборка, технические средства, использование, энергоёмкость, производительность.

**Рудаков Л.Н.** Техническое состояние гидротехнических сооружений на реке Нижняя Терса / **Л.Н. Рудаков, Г.В. Гапич** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 2(40). – С. 47–51.

Представлены результаты исследования технического состояния низконапорных гидротехнических сооружений, формирующих каскад искусственных водоемов на р. Нижняя Терса. Установлены основные причины нарушения и неудовлетворительного состояния ГТС. Выделены наиболее существенные недостатки, связанные с водосбросами и невозможностью пропуска избыточных расходов паводковых и дождевых вод. Показана опасность природопользования и нарушения инженерно-экологического состояния приречных территорий. Предложены методы диагностики технического состояния сооружений, которые позволяют выявлять нарушенные участки и потенциальные зоны формирования опасных инженерно-геологических явлений на стадии их формирования.

**Ключевые слова:** гидротехническое сооружение, дамба, водохранилище, пруд, водосброс, экологическая безопасность, техническая диагностика, естественное импульсное электромагнитное поле Земли.

**Тищенко С.С.** Влияние типа полки на агротехнические показатели работы двухъярусного плуга / **С.С. Тищенко, Н.А. Сова** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 2(40). – С. 52–55.

Рассмотрена геометрическая модель линейчатой поверхности отвала плуга, которая появляется при движении прямолинейной образующей, имеющей общую точку с направляющей кривой. Геометрическая модель базируется на условии торсовости, в которое введен коэффициент кривизны. На основании модели изготовлен полуинвентарный корпус нижнего яруса двухъярусного плуга, который при исследовании показал преимущество перед культурным по запахиванию растительных остатков.

**Ключевые слова:** двухъярусные плуги, геометрическая модель поверхности, полки, агротехнические приемы, запахивание растительных остатков.

**Павленко С.И.** Ускоренное компостирование подстилочной смеси куриного помета и лузги семян подсолнечника / **С.И. Павленко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 2(40). – С. 56–61.

Рассмотрены результаты экспериментальных исследований переработки куриного помета птицеводческих предприятий в высококачественные экологически безопасные органические удобрения с использованием в качестве подстилочного материала подсолнечной лузги – отходов семян подсолнечника. Исследования проводились в условиях хозяйства с введением жидкости, обеспечением приготовления смеси механическими комплексами машин и интенсивной аэрации. Предлагаемая технология получения органических удобрений позволяет значительно повысить качество состава компостов по NPK и рекомендуется для внедрения в хозяйствах с объемом приготовления компостов 3–5 тысяч тонн.

**Ключевые слова:** куриный помет, лузга подсолнечника, ускоренное биотермическое компостирование, механизированный технологический процесс, разбрасыватель органических удобрений, погрузчик, компост, органическое удобрение.

**Глебенюк В.В.** Микроструктурные изменения органов морских свинок, зараженных диссоциативными вариантами *Mycobacterium bovis* быстрорастущего штамма / **В.В. Глебенюк, О.Г. Глебенюк, Ю.О. Верченко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 2(40). – С. 62–65.

Установлено отсутствие характерных для туберкулеза макроскопических изменений у морских свинок, зараженных диссоциативными вариантами *M. bovis* быстрорастущего штамма. При гистологическом исследовании образцов отмечены нарушение кровообращения, неравномерно выраженный интраальвеолярный отек и гиперплазия красной пульпы селезенки. Воспалительный инфильтрат представлен преимущественно лимфоцитами, примесью макрофагов и сегментоядерных лейкоцитов.

**Ключевые слова:** микобактерии, диссоциативные варианты, морские свинки, легкие, селезенка, воспалительная инфильтрация.

Выяснение биологической активности и “чистоты” культуры диссоциативных форм *M. bovis* / **А.А. Ткаченко, М.В. Билан, Е.Г. Глебенюк, Ю. Сокол, Л. Гордиенко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 2(40). – С. 66–69.

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Показано, что культуры диссоциативных форм *M. bovis*, которые пассажируются в условиях лаборатории кафедры, потеряли способность генерироваться (размножаться) при 37 °С (за исключением микобактерий 117,б варианта), по крайней мере в первые 42 суток наблюдения; у микобактерий вариантов 118 и 117,в низкая биологическая активность; только один штамм (117,б) владеет способностью активно размножаться как при низкой плюсовой (3 °С), так и оптимальной традиционной температуре (37 °С). Диссоциативные формы *M. bovis* 117,а, 117,б, 117,в, 118 вариантов сохраняли морфологическую стабильность в течение всего периода исследований, что свидетельствует о «чистоте» этих культур.

**Ключевые слова:** микобактерии, диссоциативные формы, морфология, биологическая активность, тинкториальные и культуральные свойства.

**Зажарская Н.Н.** Химические и иммунологические показатели козьего молозива и молока в зависимости от периода лактации / **Н.Н.Зажарская, Ю.В.Самойленко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 2(40). – С. 70–75.

Исследовано 47 проб молозива и молока коз, оценены изменения органолептических, химических и иммунологических показателей после окота в течение месяца. Показатели жира, плотности, общего белка, лактозы молозива вторых–седьмых суток лактации существенно отличались от первого надоя ( $P < 0,05$ ). Количество соматических клеток в молозиве первого дня в десять раз больше, чем седьмого дня ( $P < 0,05$ ). Содержание иммуноглобулинов G в первые сутки после окота составило 15,79 г/л, на вторые снизилось на 16,8 %, на третьи – в 6 раз ( $P < 0,05$ ). С шестых суток лактации содержание иммуноглобулинов G не превышало 1 г/л.

**Ключевые слова:** молозиво коз, период лактации, иммуноглобулины G, соматические клетки, белок, жир, плотность, лактоза.

**Гуцуляк А.С.** Воспроизводительная способность голштинских коров разного возраста в условиях интенсивной технологии производства молока / **А.С. Гуцуляк** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 2(40). – С. 76–79.

Представлены результаты анализа воспроизводительной способности коров в зависимости от их возраста. Определено, что у первотелок период бесплодия был более длительный, а у адаптированных коров третьей лактации этот период был меньше на 27,32 %. Показатели коэффициента воспро-

изводительности зарегистрированы достаточно высокими, особенно у животных третьей и пятой лактации, поскольку они имели короче межотельный период.

**Ключевые слова:** корова, воспроизводительная функция, сервис-период, межотельный период, продолжительность лактации.

**Пищан И.С.** Смена режима выдаивания и адаптивная реакция коров швицкой породы / **И.С. Пищан** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 2(40). – С. 80–87.

Установлено, что при новом режиме доения, когда доильные стаканы оборудованы трехгранной сосковой резиной без калиброванного отверстия в ее головке для впуска атмосферного воздуха в подсосковое пространство доильного стакана и величиной вакуума в системе 42,5 кПа, интенсивность молоковыведения значительно возрастает, а пик молокоотдачи наступает уже на второй минуте доения. Адаптивная реакция лактирующих коров швицкой породы наблюдается в незначительном колебании разового удоя и не имеет системного характера, поэтому и не влияет на качественный состав молока.

**Ключевые слова:** корова, лактация, режим доения, удой, рефлекс молокоотдачи, интенсивность молоковыведения, качество молока.

**Онищенко Е.** Интеграционная альгокультура как многофункциональное звено для малых фазанариев / **Е. Онищенко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 2(40). – С. 88–94.

Обсуждается потенциал культивирования микроводорослей для обеспечения ценной кормовой добавкой охотничьих птиц и утилизации отходов производства. Решается задача разработки интегрированной системы культивирования с учетом рыночных требований к качеству продукции (биомассы), удельной производительности и стоимости самой системы, которая может обеспечивать и процессы очистки. Экспериментальная работа по интеграции звена культивирования в производственный цикл малой птицефермы была выполнена для выявления возможности внедрения в фазановодстве. Доказано, что помет фазанов может быть хорошим источником питательных веществ для культивирования хлореллы, которая, кроме функции преобразования биогенов, используется в качестве кормовой добавки, оказывающей существенное влияние на продуктивность птиц. Предложенная схема экологического обеспечения повышает показатели хозяйства в целом.

## АННОТАЦИИ. КЛЮЧЕВЫЕ СЛОВА. БИБЛИОГРАФИЯ

**Ключевые слова:** птицеводство, фазаны, хлорелла, биологически активная добавка, утилизации отходов.

**Шкурко Т.П.** Рост и развитие телок голштинской породы, полученных методом трансплантации эмбрионов / **Т.П. Шкурко, О.И. Иванов** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 2(40). – С. 95–103.

Определено, что при выращивании телята-эмбриотрансплантаты уступают по живой массе и линейным промерам своим ровесникам (искусственное оплодотворение). При этом у телочек сохраняется достаточно высокий уровень корреляционной связи между живой массой и линейными промерами туловища ( $r=0,56-0,98$ ). Степень изменчивости живой массы телят обеих групп самая высокая при рождении, а с 3-месячного возраста – средняя. Отмечено, что изменчивость живой массы у телят-трансплантантов выше во все возрастные периоды раннего онтогенеза.  
**Ключевые слова:** телята-эмбриотрансплантаты, живая масса, линейные промеры, интенсивность роста.

**Карамушка А.Н.** Повышение конкурентоспособности производителей зерновых культур в Украине / **Карамушка А.Н.** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 2(40). – С. 104–108.  
Определено, что зерно для Украины – стратегическая рыночная продукция и один из главных источников денежных поступлений большинства отечественных аграрных предприятий. Установлено, что уровень конкурентоспособности производителей зерна в большей мере зависит от качества продукции, которую они предлагают на внутреннем и внешнем рынках. Утверждается, что сегодня для обеспечения качества продукции необходимо использовать комплекс инноваций производственного, продуктового и управленческого характера, оптимальное планирование качества и объемов производства зерна, чтобы избежать разбалансированности зернового рынка.

**Ключевые слова:** производители зерновых культур, зерно, инновации, конкурентоспособность, планирование деятельности, качество продукции.

**Каплич Ю.И.** Основные функции управления сельскохозяйственными предприятиями зернового подкомплекса в современных условиях хозяйствования / **Ю.И. Каплич** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 2(40). – С. 109–113.

Обоснованы понятие и сущность “функции управления”. Рассмотрены основные подходы к классификации функций руководства предприятиями, которые дают возможность предприятиям достигать целей и увеличивать свои доходы. Обращается внимание на особенности систематизации функций управления. Раскрыто содержание и систематизированы основные функции управления аграрного предприятия, которые выступают целостной основой повышения эффективности его работы.

**Ключевые слова:** управление, функции управления, экономическая эффективность, аграрные предприятия, механизм управления, классификация, функциональные обязанности, мотивация, планирование.

**Шутько Т.И.** Модель оптимизации плана производства овощей открытого грунта / **Т.И. Шутько** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 2(40). – С. 114–117.

Предложены модели оптимизации плана производства овощей открытого грунта с учетом трех возможных вариантов развития рыночных событий: паритет, усиленный или ослабленный диспаритет цен. Для аграрного предприятия “ВПК-АГРО” Днепропетровской области к каждому из случаев даны рекомендации относительно емкости ассортиментного портфеля. Установлено, что обоснованные управленческие решения, даже при сильном диспаритете цен, позволяют снизить затраты чистого дохода до 17,5 % относительно варианта хозяйствования при паритете цен.

**Ключові слова:** овощи открытого грунта, управление затратами, диверсификация производства, экономико-математическая модель, паритет и диспаритет цен, ассортиментный портфель.

**Бойко Н.А.** Использование нелинейных нейронных сетей для моделирования урожайности сорго зернового в условиях южной Степи Украины / **Н.А. Бойко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 2(40). – С. 118–123.

Построена множественная регрессионная модель формирования урожайности гибридов сорго зернового в зависимости от исследуемых факторов. Установлено, что вариация значения стандартного отклонения урожайности в большей степени зависит от климатических условий года и срока посева, а в меньшей степени от гибридного состава и густоты стояния растений.

**Ключевые слова:** гибриды сорго, урожайность, сроки сева, густота стояния растений, нейронные сети, моделирование.

## АННОТАЦИИ. КЛЮЧЕВЫЕ СЛОВА. БИБЛИОГРАФИЯ

**Клочан В.В.** Структура капитальных инвестиций в аграрное производство Украины и основные источники их формирования / **В.В. Клочан, И.В. Беспятая** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 2(40). – С. 124–129.

Проанализированы современное состояние, динамика и структура капитального инвестирования в аграрном секторе экономики Украины. Выявлено, что для большинства отечественных агропредприятий источником инвестиций, часто единственным, являются собственные средства, тогда как для надежного финансового обеспечения крайне необходимо использовать привлеченные средства, средства государственного и местного бюджетов. Охарактеризованы основные источники их формирования в 2010–2014 гг. Изучены пути использования капитальных инвестиций в аграрном производстве и основные направления повышения инвестиционного обеспечения аграрных товаропроизводителей.

**Ключевые слова:** инвестиции, структура капитальных инвестиций, аграрный сектор, растениеводство, животноводство, материально-техническая база, основные источники инвестирования.

**Келюх А.А.** Информационные технологии экономической оптимизации расчета параметров растениеводства / **А.А. Келюх** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 2(40). – С. 130–135.

Рассмотрен учет основных параметров и характеристик себестоимости в растениеводстве за последнее десятилетие среднестепной зоны Украины на основе относительных и средних показателей, которые свидетельствуют о развитии некоторых производственных ресурсов в растениеводстве, размере зон мелиорации, оперативной оптимизации режима орошения, структуре посевных площадей и пастбищ; наличии и количестве объектов производственной фауны, разграничении хозяйственных сооружений и техники, росте аграрного сервиса в целом.

Показано место и роль современных информационных технологий в автоматизации вычислений для снижения себестоимости учета некоторых параметров в растениеводстве современных аграрных фермерских хозяйств Украины.

**Ключевые слова:** зоны мелиорации, структура посевных площадей, параметры растениеводства, себестоимость продукции, учет затрат, режим орошения, участки землепользования, аграрный сервис, фермерские хозяйства.

## ABSTRACTS. REFERENCES. KEYWORDS

### **Effectiveness of the minimum maize cultivation in conditions of the northern steppes of Ukraine (p. 5–9)**

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Changing priorities of modern agriculture Ukraine steppe on a background of further degradation of chernozem soil necessitates the improvement of the system under maize cultivation in the direction its minimization based rotation type, quantity and quality of stubble residues, fertilizers, phytosanitary condition of crops, technical capabilities farms.

Recently, the technology of growing corn significant distribution becomes minimum tillage mulch, which eliminates the possibility of turning the topsoil and involves the use of by-products of previous crops. In connection with limited amount of information on the impact minimum tillage mulch on the effectiveness of corn growing in the northern steppe and contradictory attitude to various researchers of any soil cultivation, there is a need to continue the research in this direction to determine the optimal variant loosening of arable land technology in growing crops that provides optimal agrophysical condition of the soil, water and nutrient regimes phytosanitary state and promotes the maximum grain yield minimum number of production costs and high profitability.

The purpose of research – determine the effect of different ways of minimum mulch basic soil cultivation and fertilization on high backgrounds stubble remains in the rotation agrophysical on soil properties (structural condition, density, hardness), water, nutrient regime, weediness, productivity and economic efficiency of growing corn conditions of the northern steppes of Ukraine.

Agrophysical optimal water and soil properties (structural state (content of fractions of 10–0,25 mm) – 73,5–89,1 %, density – 1,17–1,20 g/cm<sup>3</sup>, hardness – 10,6 kg/cm<sup>2</sup>, stocks of productive moisture 1,5 m layer – 73,6–175,3 mm) in corn cultivation technology provides chisel cultivation and moldboard less loosening soil. Tendency to decrease in N-NO<sub>3</sub>, P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O in descending plowing – chisel cultivation – moldboard less loosening due to somewhat intense mineralization process is by plowing.

Use moldboard less cultivation technology of growing corn drives to increased weed-infested in 1,2–1,5 times as compared to plowing and chisel cultivation, which in turn requires additional regulation and post-use of soil herbicides for reliable control of weed-infested crops.

The minimum yield advantage over corn on no fertilizers background and at entering N30P30K30 had plowing and chisel cultivation (4,83–5,33 tone/hectare), while increasing the

proportion of nitrogen (N60P30K30) – moldboard less minimum hoeing soil (5,62 tone/hectare), due to the normalization process of mobilizing nitrate in attracting a large number of cycle plant residues. Given the slight differences in grain yield possible to assert about the equivalence of these methods basic soil cultivation. Minimizing soil cultivation when growing corn makes it possible to significantly reduce the cost of fuel and energy resources, especially during the chisel cultivation 8.3 litre/hectare moldboard less cultivation – 14,8 litre/hectare, while increasing revenue and profitability of production by 9,0–12,6 %.

**Keywords:** corn, minimum tillage, agro physical condition, soil moisture, stubble remains, fertilizers, productivity.

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### **Botanical morphological features of perennial grasses legumes depending on the ecological conditions of the withoutcover sowing (p. 10–13)**

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It is represented botaniko-morphological differences of legumes grasses: alfalfa seed, clover,

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sainfoin sandy, white clover, lotus corniculatus and eastern galega orientalis in the year of sowing for the withoutcover growing. A difference is showed between the probed grasses in the features of germination, offensive and passing of phase of branching out, forming of bush of grasses, in the first and second hay-crops, features of growing after mowing. The first simple leaves are formed sandy sainfoin, red clover, white clover and galega orientalis. At the same time lotus corniculatus, alfalfa crop form the first complex leaves. Beginning from the phase of branching out of legumes grasses which develop at the withoutcover sowing, there is awakening of buds on the head of root-collar and underground part of stem. At the plants of esparcetu sandy and clover leaves grow only from buds on a root-collar. From underground buds escapes develop in lotus corniculatus, alfalfa planting and galega orientalis. Only the plants of melilot white develop one central stem. It is set that at the withoutcover sowing a melilot white and eastern galega orientalis develop on a winter type, and other grasses – after furious. After mowing of the first hay-crop of 'lyadvenec' the horned grows from the unmowed above-ground part of stem and from buds on underground part of stem, an alfalfa sowing grows from buds, placed at the level of soil, and also from buds on the unmowed part of stem, esparcet is sandy and clover I grow from buds, placed at the level of soil, a melilot white grows from buds, placed on the unmowed part of stem.

**Keywords:** perennial grasses legumes, botanical morphological features, withoutcover growing.

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### Terms of sowing and density of corn hybrids plants under arid Steppe (p. 14–18)

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Field germination of seeds of cold-resistant hybrids Kvitnev 187 MR, Shayan, Baturin 287 MR,

Izyaslav, 220 MR, DMS Grono, DMK Cherie, Vizier was at the level of 86–88 % under sowing at 10–13 April, when it was sown on April 20–23 on 89–90 %, germination period was 10–12 days. Under early dates of sowing plants flowered and began pouring the grain under more favorable weather conditions, before the beginning of heat and drought.

HybridsIzyaslav 220 MR, DMS 2510 and Krassilov 327 MR formed highest yield with low grains moisture under sowing at 10–13 April, DMS Grono, DMK Cherie, Vizier and Standard formed one from April 10 to 30, andTuriaat the third decade of April.

In the Steppe zone under corn hybrids sowing at the period from 10 to 30 April there is a high probability of a dry grains obtained, which do not need to be dried and it is suitable for long storage.

The optimum hybrids plant density in drought Steppe for so average in earliness hybrids Izyaslav 220 MR, DMS Gronoand DMK Cherie is 60 thousand per ha.

Plants of DMS 2510 form a more developed leaf surface, significantly higher than the previous hybrids in the height of the stem, and therefore the level of optimal density for them is somewhat lower and its 50 thousand per ha.

For middle-earliness hybridsKrassilov 327 MR, Vizier and middle late-maturing Standard better conditions for the normal water consumption and the formation of yielding are at a density of 50 thousand per ha.

In plants ofmiddle late-maturinghybrid Turiaerection arrangement of leaves on the stem, which develops the prerequisites for effective using of photosynthetic-active radiation, in connection with they can form a high yield under high density 60 thousand per ha.

**Keywords:** corn, hybrids, drought, terms of sowing, density of plants, grain yield

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### **Structure of the hydrogeomorphological system for creating the geo-foundation for the ecological framework of the Dnieper river basin (p. 19–25)**

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The paper presents the results of using geographic information systems (GIS) for determining the structure of the hydrogeomorphological system and creating the geo-foundation for the ecological framework of the Dnieper river basin. Geo-modeling has been carried out based on the SRTM-90 digital elevation model with the application of the Hydrology tools of Spatial Analyst Tools working module of the ArcGIS 10.1 licensed software product. Basin organization of a territory at the level of the water catchment area of erosion forms of order IV, where landscape heterogeneity can be identified, provides the possibility of studying specific geomorphological load on the basin and all of the landscape components in the relationship between their characteristics and water flow parameters. For the Dnieper river catchment area ( $S = 511$  thousand  $\text{km}^2$ ), 776 sub-basins of 1,9 to 22680,2  $\text{km}^2$  in size of orders 4–9 were identified. In the area of the Dnieper river basin, the most common are small river sub-basins with episodic underground feeding – 68,8 %; small rivers with constant underground feeding – 13,8 %; middle-size rivers – 0,6 %. The findings show that almost half the length of erosion forms within the Dnieper basin is represented by 1st order forms, and 90 % of the total length are forms of orders 1–4. The area drained by thalwegs of orders 1–4 makes up 58,4 %, that of orders 5–6 – 33 %, of orders 7–9 – 8,6 %; thus, the supply of the main riverbed with water and friable soil is made by the upper and middle parts of the river (91,4 %), while feeding with local upper soil layer components of the lower reaches of the Dnieper amounts to 1,8 %. The system of catchment sub-basins of different orders can be used as a properly organized geomorphological basis for the substantiation of the environmental framework of the Dnieper river basin. The study presents the concept of the environmental framework of a river basin. Making further use of research results will provide an opportunity of multidimensional studying and determining the effect of natural and anthropogenic factors

on the ecological state of the Dnieper river with the aim of their maximum removal through the development of adequate environmental protection and optimization of environmental management at different hierarchical levels of river basin organization.

**Keywords:** river basin, hydrogeomorphological system, basin organization, Dnieper river, ecological framework, GIS technology, geo-modeling.

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### **Efficiency and economic evaluation of corn growing with the application of growth stimulants and micronutrients (p. 26–31)**

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The economic effectiveness of such micronutrients as Orakul, Orakul Biozinc, Orakul Multicomplex, Orakul Colamine Boron and such plant growth stimulators as Vympel, Vympel-K in incrustation of corn seeds and in foliar application in different phases of plant development has been substantiated.

The work was performed in 2013–2015 in the fields of Dnipro research farm of the State Institution Institute of Agriculture of the Steppe Zone of NAAS of Ukraine. Ordinary low humus full depth chernozem was the soil of the experimental plot. The experiment was carried out in triplicate. The accounting area was 50,4 m<sup>2</sup>.

The data obtained allowed us to establish that a maximum yield – 6,74 to 6,88 metric tons per hectare – was gathered in after treating the seeds with Vympel and spraying the corn plants with Orakul Biozinc, Orakul Multicomplex and Vympel in the phases of 3–5 and 7, 8 leaves. The lowest increase (0.14 metric tons per hectare) was obtained in the variant where only incrustation of corn seeds with Vympel-K was performed.

The economic analysis has shown that the application of Vympel in seed treatment and spraying corn plants with Orakul Biozinc, Orakul Mul-

ticomplex and Vympel in the phases of 3–5 and 7, 8 leaves results in higher production costs and receipt of the highest conditional net profit that reaches 8468 to 8793 UAH per hectare while treatment of corn seeds with Vympel alone gives the lowest economic profit, only 445 UAH per hectare.

**Keywords:** corn, growth promoters plants, fertilizers, yield, economic evaluation, herbicides, weeds.

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### **The peculiarities of heavy metals pollution of soils of Algiers city (p. 32–36)**

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Soils contamination with heavy metals is a major concern and common problem in Algerian big cities. The case of Algiers which have known in last years a rapid urbanization and increasing of industrialization. These mega police activities became synonymous with economic and social progress. Moreover, they led to many problems in ecological terms, due to various urban landscapes pollution (waste disposal, atmospheric, soil and underground water pollution etc). The present research was conducted to determine

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the features of heavy metals absorption by soils collected in Algiers. Comparing the obtained data demonstrates that the content of PM10 dust particles in Algiers is 1,5–4,0 times higher than the WHO standards. Atmospheric pollution with technogenic dust is associated with fallout of lead and other heavy metals. Been recorded a greater pollution with lead, nickel and cadmium in the district of Bab El Oued compared to Ben Aknoun district. Exceeding the European standard (0,2 mg/m<sup>3</sup>) reaches up to 4 times. Unfortunately, until now the preferential refueling of vehicles in Algeria used gasoline as an antiknock additive of tetraethyl lead (0,4–0,8 g/l). However, the presence of such additives leads to the fact that more than half of lead pollution of soil and plants accounted for the share of road transport. Wherefore the soil absorption to heavy metals was assessed by plotting the isotherms and determining the maximum absorbing capacity. Whereas results study on sorption isotherms of soils of Algiers show that the tested elements can be arranged in the following descending order: Pb > Cu > Zn > Cd. The studies on limiting absorption capacity of soils of two city districts to heavy metals showed significant differences in relation to lead, cadmium, zinc and copper for lower and third upper layers. Lower layer has got much more maximum absorbing capacity to heavy metals. Thus, this layer can play positive role as geochemical barrier to avoid heavy metals leaching.

**Keywords:** adsorption isotherm, soil pollution, heavy metals, sorption capacity, Algeria.

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### The pneumatic system for a hydropneumatic sowing device (p. 37–41)

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The urgency of the problem. The proposed method odnosno coordinate minutnogo seed in bridged farming was implemented in a laboratory setting, the experiments which confirmed the efficiency of the hydropneumatic sowing device (HSD). The use of a metering device for piece selection of seeds from seed tanks and feeding it into the zone of sowing allows to expand the scope of HSD.

Purpose – justification of the parameters and the choice of devices for manual pneumatic hydro-pneumatic seeder with metering system.

The results of the research. For HSD desired air pressure in the range of 0,08–0,15 MPa. When using this device in the composition of pavement of the machine you can use your existing pneumatic equipment, and to manually drill the equipment you need to create.

As a compressor you can use car mencompare for inflating tires. The disadvantage of such compressors is excess capacity (30–40 l/min), large enough capacity that requires special power source to 12 V, 15–20 amp DC. In addition, cheap car mencompare have insufficient reliability and durability.

Significant reliability and durability inherent in hermetischen motor-compressors of household refrigerators (MTBF 25000 hours, the guaranteed period of operation – 15 to 20 years). As a rule, dispose of come refrigerators, the compressor which did not work the full resource and can be used for different needs not on the main purpose.

The results of the work on the creation of the pneumatic system for manual hydro-pneumatic seeder with metering system prove the possibility of using the motor-compressors disposed household refrigerators. The dependences allow to perform engineering calculations units of pneumatic system.

**Keywords:** sowing apparatus, one-seeding sowing, seed one-seeding, pneumatic system, the compressor.

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### **Power capacity of technical means for preparing and harvesting the dew-retted flax stock (p. 42–46)**

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The production of the dew-retted flax stock by means of combine picking of fiber flax comes with laying the straw rows along the flax field made by the flax harvesting combines ЛК-4Т or ЛК-4А foremost used with the tractor aggregates of 1,4 type. The loosening of rows by the machine-tractor aggregate (MTA) with shakers ВЛ-2, ВЛ-3. ВРЛ-3 or with fluffing attachments ВЛН-2, ВЛН-3, ВЛ-3Т, ВЛК-3Ч, ВЛН-4,5 and ВЛЛ-3 can be the next operation. The turning of the rows by MTA with the turners ОСН-1, ОСН-1А, ОСН-1Б, ОЛН-1, ОЛП-1, ОЛП-1Т and ОЛПБ-1 is considered to be technically efficient. The doubling of rows with the help of СД-2 and ОСЛ-2 doublers is applied to increase the productivity of press-pickers. The roll press-pickers with press cameras of changeable or constant capacity are used for picking the flax stock rows and shaping it in rolls. Russia, Belarus, Ukraine, West European countries and USA has developed the appropriate press pickers that make it possible to pick the flax stock with lower labour costs as well as to mechanize the next operations. The loading of rolls on vehicles is made by the front loader ПФ-0,5 with ППЛ-0,5 device, ПРУ-0,5 loader and А-527 loader. For the roll transportation they use the appropriate transportation vehicles, lorries with trailers, trailer platforms, self-loading trailers and 4 ton tractor trailers.

The efficiency of the above mentioned technical means can be evaluated by the determination of their power capacity that serves as a criterion for the selection of MTA the usage of which makes it possible to substantiate the efficiency of a particular aggregate or machine. The article specifies

the power capacity of the given technical means according to their technical purposes as well as studies the changes in power capacity depending on the MTA efficiency and vehicle carrying capacity. It presents the backgrounds that substantiate the aggregate efficiency and trailers carrying capacity.

**Keywords:** flax stock, preparation, harvesting, technical means, usage, power capacity, efficiency.

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### **Study the technical condition of hydraulic structures on the river lower ters (p. 47–51)**

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The results of the study of technical condition of earth dams. Work carried out on the river Lower Tera. We investigated 8 facilities at rates cascade. Ponds are used for irrigation, fish farming, recreation. Erected facilities at the end of the last century. The gardens and field plowed almost to the water's edge. Not observed distance environmental protection zones. Washed by rain the soil leads to siltation of reservoirs, reducing the useful volume of water. The accumulated volume of silt increases the load on the dam and reduces the stability factor. All the waterworks are in poor condition. Of particular danger is fa-

cilities for water discharge. They partially demolished, no lattice. Reduced ability culvert spillway facilities during the passage of the maximum expenses of meltwater and rain floods. Dams are subject to considerable abrasion from the upstream side. There water filtration through the dam body. Promising areas for detecting damage to dams and increased filtration zones is the method of natural electromagnetic field of the Earth. Thus, during a break one of the cascade of dams, the risk of destruction downstream. The timely detection of potentially dangerous dams and increase their level of technical security is an urgent task.

**Keywords:** hydraulic structure, dam, storage reservoir, pond, spillway, environmental safety, technical diagnostics, natural pulsed electromagnetic field of the Earth (NPEMFE).

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### **The influence of setter type on agrotechnical data of double-decker plow work (p. 52–55)**

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The use of double-deck plow is plant residues plowing to a depth from which they are not drawn on field surface at further processing, providing increased nutrients in the soil and water reserves. The quality of treatment depends on the type of surface setter bulks that are set on the top and bottom of plow tiers.

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Double-deck plows that are in production, have arable frame upper and lower tiers after classical method of cylindroid surface. Instead of the existing cylindroid surface it is proposed ruled surface that is formed by movement in the space of straight lines having a common point of the guide curve. Generating is set on planes by its projections. Geometric pattern of surface connects the position settings of projection generators with coordinates of guide curve common point. Based on the conditions of develop surface, which includes the curvature coefficient, derived differential equation provisions projections generators. Integrating of this equation allows with known projection angle and coordinates of joint generatrix points on the same plane to determine the angle of projection generatrix on another plane and build surface. Curvature factor allows to design surface curvature which varies significantly, particularly when the coefficients curvature is zero the surface will be develop. With the developed model it is designed and manufactured half screw setter of lower housing component. Comparative studies of tiered plows agrotechnical data with arable frames and arable frames with a half screw combination found advantage of a plow with a half screw setter.

At the working speed of 2,8 m/s and at a depth of 22 cm the depth of plant residues plowing with half screw setters was 15,9 cm, and with arable was 14,6, which is 6,41 % more. Percentage of plant residues plowing with half screw setters was 98,9 %, and with arable was 96,1 %, which is 4,3 % higher. Increased data are explained due to the fact that on the half screw setter surface the soil moves in a larger order. Thus, the proposed model surface allows to design plowing setter frames with improved agrotechnical data.

**Keywords:** double-deck plow, geometric pattern of surface, setter, agrotechnical practices, residues plowing.

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### **Experimental studies of accelerated composting litter mixture of chicken manure and the husks of sunflower seeds (p. 56–61)**

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Fast composting litter mixture of chicken manure and the husks of sunflower seeds. The results of experimental studies of processing chicken manure poultry enterprises in high-quality environmentally friendly organic fertilizers using as bedding material sunflower husks – waste sunflower seeds. The study was conducted in the conditions of the economy. Laid collar 4 at 300-500 tons of litter, raw humidity  $W = 35-40$  %. The piles additionally introduced water and light grain waste. Mixing, aeration and formation turners performed mechanically complex, comprising a bucket loader T-156K, the unit consisting of a tractor T-150K and spreader of organic fertilizers PRT-10. Performance of the complex up to 300 t/shift trapezoidal clamps: base width – 3,0–3,5 m; height 1,5–1,8 m; length 3,5–4,5 m.

The piles are uniform in height and width, fit without technical passages. The temperature inside the clamps by introduction of moisture is in the range of 60–65% irrespective of the ambient temperature. The event provided a complete decomposition of the husk for 60–70 days until smooth. Scents and prevalence pathogens microflora available. The quality of the composition of compost for NPK improved by 2–2,5 times. The proposed technology and its technical support is recommended for households with the volume of the preparation of composts up to 3–5 thousand tons.

**Keywords:** chicken manure, sunflower husks, biothermal accelerated composting, mechanized production process, organic fertilizer spreaders, loader, compost, organic fertilizer.

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### **Microstructural changes in guinea pigs infected dissociative variants *Mycobacterium bovis* quickly growing strain (p. 62–65)**

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The results of the study pathomorphological changes in guinea pigs infected *M. bovis* variants dissociative quickly growing strain. Experimental studies conducted in 2015 on the basis of teaching and research laboratory of epizootiology and infectious animal diseases Dnepropetrovsk state agro-economic university.

Dissociative variants mycobacterium not caused death and infection development characteristic of tuberculosis in laboratory animals. Found no specific to tuberculosis of macroscopic changes.

For histology samples marked circulatory problems, uneven intraalveolar edema and hyperplasia red pulp the spleen.

Subplevral areas epy lung tissue were uneven inflammatory infiltration. The inflammatory infiltrate was represented mainly by lymphocytes, macrophages mixed and segmented leukocytes. Lymphoid follicles hyperplasia had signs of increasing sizes by expanding the breeding centers. Stromal elements were swollen, bad profile sinuses.

**Keywords:** mycobacterium, dissociative variants, guinea pigs, lungs, spleen, inflammatory infiltration.

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### **Elucidation of the biological activity and the "purity" of the culture dissociative forms of *M. bovis* (p. 66–69)**

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Those of dissociative forms of *M. bovis*, which passed in a laboratory of the department have lost the ability to generate (be reproduced) at 37 °C (except for of mycobacteria 117b of variant) at least in the first 42 days of observation. Established, that the biological activity of mycobacteria is different, not only for the culture at the same temperature, but at different. Mycobacteria of the 117b variant were biologically active both at 37 °C and at 3 °C, however, in a dilution of 10–9 at 37 °C the viability of mycobacteria and their activity was 4, 3 times lower than at 3 °C. Mycobacteria 117a of variant at a temperature of 3 °C have higher activity because showed growth of colonies on day 14 in all dilutions. Sufficiently low biological activity was observed in mycobacteria 118 of variant, because their growth manifested only in dilution 10–7 and at 28 days of cultivation. Slightly higher, but low too, the activity is detected and in 117b of variant – growth manifested in dilution 10–7 and 10–8 and at 28 days of cultivation.

The cultures of dissociative forms of *M. bovis* 117b of variant which was obtained at temperatures 3 and 37 °C differed not only among themselves but also from of the original culture. However, in the morphology of mycobacteria significant differences were not observed. At 37 °C established nonacid-proof grainy long sticks (10–15 microns), nonacid-proof and acid-proof single grains. Mycobacteria of original culture – nonacid-proof short sticks and grains and only single nonacid-proof long sticks. At the same time mycobacteria, which form colonies at 3 °C – grains non acid-proof and nonacid-proof grainy sticks of different lengths; acid-proof single grains and acid-proof single short sticks.

However, with increasing time of cultivation of mycobacteria 117b of variant at 3 and 37 °C, by microscopy were not identified acid-proof grains and sticks. At microscopy of the mycobacteria 117a and 117v of variants that were cultivated by 3 °C, detected nonacid-proof sticks of different lengths (short and long) and nonacid-proof single grains, throughout the period of the study. At microscopy of mycobacteria dissociative form 118 of variant detected grainy nonacid-proof sticks of different lengths and single nonacid-proof grains. There was not of classic (standard) L-shapes (ovals) that were observed in the original culture, probably due to a significant reduc-

tion of lipids in the cell wall, because were a significant number of passages.

Dissociative forms of *M. bovis* 117a, 117b, 117v, 118 of variants remained morphologically stable over the entire study period, indicating that these cultures are the "pure".

**Keywords:** mycobacteria, dissociative forms, morphology, biological activity, tinctorial and cultural properties.

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### **Chemical and immunological parameters of goat colostrum and milk depending on the lactation period (p. 70–75)**

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The quality of colostrum depends mostly on the concentration of Ig G. Goat colostrum contains immunoglobulins G in two times more than cow colostrum. Concentration of immunoglobulin G depends on the breed of goats. Meat breeds have a higher concentration than the dairy breed of goats. The changes of organoleptic, chemical parameters and concentration of immunoglobulin G were studied depending on the day of lactation. The materials of the research were 47 samples of colostrum and milk of goats selected at the farm "Ukrzilgosprom" Pidhorodne, and goats from the village Mar'yanske, Apostol district of Dnepropetrovsk region in 2015 (mostly in the first month of lactation). The amount of somatic cells was determined by means of viscosimetric analyzer "SOMATOS-M". The biochemical indexes of milk were determined by means of ultrasonic analyzer of milk of "Ekomilk type MILKANA KAM 98-2a". The concentration of immunoglobulin G was determined by simple radial immunodiffusion by means of IDRing Plate-Caprine IgG Test. The organoleptic parameters of goat's colostrums at first-third day after lambing were significantly different from milk of subsequent days. Consistency of goat colostrum was thick, had specific smell, pleasant salt taste, the color in the first three days was creamy yellow, in other samples – from white to yellow. The acidity of colostrum in the first day after lambing was 56 °T, in the second and third days was 15–16 °T. This high acidity was observed in the first day because of the maximum content of immunoglobulins in colostrum. The density of colostrum in the first day after lambing was 68,8 °A, in the second – 27,5 °A and in the third – 26,4 °A. The indicators of the colostrum fat, density, total protein, lactose of the second-seventh days of lactation significantly decreased comparing to the first milk yield ( $P < 0,05$ ). Somatic cells count in colostrums in the first day was in two times more than the second and in ten times more than the seventh day, but because of the large average statistical deviation the significant difference was found only between indicators of the 1 and 7 lactation days ( $P < 0,05$ ). The concentration of immunoglobulin G in goat's colostrums in the first yield was 15,79 g/l. Compared to the first yield an average content of Ig G decreased on 16,8 % on the day after lambing, in 6 times ( $P < 0,05$ ) – in the third day after lambing. Since the 6th day concentration of immunoglobulin G did not exceed 1 g/l. In determining the dependence of immunoglobulin G content from goat breed, was noticed that this

index was the same in the first and second day of lactation, and the third - decreased on 14 % in aboriginal goat. Ig G concentration of Cameroon brown goat on the second day of lactation decreased on 43 %, and the third – on 64 % comparing to the first milk yield.

**Keywords:** goat colostrum, period lactation, immunoglobulin G, somatic cells, protein, fat, density, lactose.

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**The reproduced ability of cows of holstein breed is depending on age in the conditions of intensive technology of production of milk (p. 76–79)**

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Introduction. It is known that realization of genetic potential Holstein cows is not stably programmed, as depends on an individual reaction on external environments, it is known.

Duration of parturition period over 365 days results in the increase of barren of cows, and certain losses of calves and milk.

At unsatisfactory terms maintenance for cows is violated the reproduced ability. Negative influence of abiotic factors increases in default of exercise and violation of the mode of exploitation of animals. From quality of preparation of cows to calve, as well as on his correct realization the further depends them there produced ability. Than flow better lying inside, the rather a puerperium will make off and fruitful insemination in the first two months after calve of animals.

At optimal external environments a healthy cow gives an issue regularly. Barren is predetermined by violations in feeding, maintenance and use of animals, by a failure to observe of rules of technique of artificial insemination, illnesses of genital and other organs.

Research results. Dry period at cows assists proceeding in an organism and formation in him of supplies of albuminous and mineral substances, that were lost during a previous lactation. It is necessary to mark, that first-born and cows of senior lactations had an almost identical period of dry period during a 52 twenty-four hours. In a first-born a service-period folded a 202,5 days, that was longer, accordingly, on 14,7 and 12,5 % in cows of the third and fifth lactations, but more short accordingly on 4,0 and 7,4 % for the cows of the second and fourth lactation.

For all experimental animals a parturition period exceeded a norm: in a first-born on 33,6 for the cows of the second lactation – on 35,8 for the animals of the third lactation – on 25,4 for the cows of fourth – on 37,9 and for the animals of fifth lactation – on 26,6.

The coefficient of the reproduced ability depends on duration of parturition period and in a norm must equal unit. In under taken studies of cow of the third and fifth lactations had the greatest index of coefficient according to 0,81 and 0,78, as, had more short parturition period. For animals other there was greater duration a lactation between calve, that is why they had more low coefficient of there produced ability.

Duration of parturition period over 365 days results in the increase of dryness of cows. Notedly, that most dryness was observed in a first-born and cows of fifth lactation and folded according to 17,9 and 16. For the cows of the second lactation this index was less in 1,1 from the index of first-born and equaled 15 the least index of dryness at the level of 14,4 for the cows of the third lactation.

Researches show that in a first – born a period of sterility was the longest and presented a 163,1 twenty-four, hours and for the cows of the third lactation, comparatively, the shortest – a 128,1 twenty-four hours.

Conclusions. First – born cows is characterized by the greatest futility that is caused by not adapted them to the external environments.

The full – age animals of the third lactation are characterized by the greatest reproduced ability that is a positive reaction on stimulation of sexual hunt by hormonal preparations and greater adjusted to the terms of maintenance.

The prospect of further researches is a study of influence of abiotic and biotic factors on the productive internalss of lactating cows in the conditions of intensive technology of production of milk.

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**Keywords:** cow, reproducible function, service period, period between parturition, reproductive capacity factor.

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### Changing of mode of the milking dry and adaptive reactions of swiss breed cows (p. 80–87)

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The article presents the materials of experimental studies of adaptive response Swiss breed cows during regime change milk in gon the installation type "Parallel". It is found that with the new milking regime, in which the teat cups are equipped with three – sided rubber with out a calibrated hole and a vacuum size in the system is 42,5 kPa, the intensity of the milk excretion is greatly increased, and the peak of milk recoil begins already in the second minute of milking.

Oscillations of one milk yield of Swiss breed cows is spontaneous and depends on the milking mode, the quantities of the vacuum and stiffness of the teatcup rubber. During milking with mode of vacuum 45 kPa, the peak of excretion milk accounted in the third minute of milking, and in vacuum mode to 42,5kPa peak of excretion milk occurs already at 90 seconds from the start of milking.

Such indicators as the mass fraction of fat, sugar, salt, nonfat and dry milk solids correspond to features of Swiss breed cows and suggests that the change in the mode of machine milking

on the overall process of excretion milk has no negative impact.

Swiss breed cows with different period of lactation, which has a direct impact on the udder sensitivity to stimulatory or inhibitory stimuli, easily adapt to changes in milking mode, as evidenced by the data of the high level of milk production. Thus, the milk secretion reflex of cows Swiss breed fully subordinated to the operating mode of the milking machine.

**Keywords:** cow, lactation, milking, milk yield, reflex of secretion of milk, the intensity of secretions milk, milk quality.

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### ***Integrated algae culture as multipurpose solution for small pheasant farms (p. 88–94)***

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The potential of microalgae culture for the production of high value supplement for game birds and wastes utilization is discussed in the article. As algal systems must be engineered to meet the market place demands in term of quality, quantity and pricing, microalgae's natural metabolic process meets listed criteria, assisting in the field of water purification, and providing supplemental animal feed, experimentation with microalgae culturing chain on compatibility and impacts on game birds raising in the conditions of the small farm was performed.

Analysis of the results indicates that pheasants litter can be good source of nutrients for *Chlorella* culture and transform biogens into valuable supplement which has numerous positive effects on birds health and overall production rates when introduced into bird's diet.

**Keywords:** poultry, pheasants raising, chlorella, diet supplement, waste utilization.

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### ***Growth and development of heifers of holstein breed obtained by the method of embryo transplantation (p. 95–103)***

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It was found that ET calves are inferior to their peers in body weight and linear measurements during the growing. Herewith the fairly high level of correlation between live weight and linear measurements of body are retained in heifers ( $r = 0,56-0,98$ ).

Research group of ET heifers has some higher results of correlation by the measurements of height at the withers, height in buttocks and breast depth and some lower – by live weight, chest girth for blades and oblique body length than in the control group of counterparts.

The degree of variability of live weight of calves in both groups is highest at birth, and average since 3 months of age. Herewith the variability of live weight of ET calves is higher in all age periods of early ontogenesis.

The ET heifers are not significantly exceed their peers in the control group, in accordance on 18,52 grams and 7,22 % in the first three months of life in terms of average absolute increase in live weight and intensity of growth. The average daily growth of calves were higher in the control group in following age periods. A similar regularity is traced regarding the exterior measurements.

The results show that ET calves are grow with the same intensity with control peers, but with smaller increases as live weight and body traits. Herewith live weight of heifers as experimental and control groups during 18 months of age are invested by the weighing fit of Holstein breed standards.

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**Keywords:** ET calves, live weight, linear measurements, the intensity of growth, absolute growth, variability, research group, control group.

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*Improving the competitiveness of grain crops in Ukraine. (p. 104–108)*

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Grain for Ukraine – a strategic market products and is one of the main sources of cash income of most Ukrainian agricultural enterprises. The current phase of domestic agriculture is characterized by many complex problems of transformation of logistics and industrial relations. Not stable yield of cereals in the last decades associated with the use of low-quality seeds and planting are not recognized varieties and those that were listed in the State Register of seed producers more than 15–20 years ago. Increased efficiency of grain production must serve an important task in today's environment of formation and development of agriculture, which depends on solving food security, export potential of our country in world grain markets and the level of people's welfare. Improving the efficiency and the further economic development of the grain industry in market-based innovation is impossible without ensuring proper grain producers in high-quality seed. Theoretical studies proving the competitiveness of grain depends largely on the quality of products they offer in the domestic and foreign markets. To ensure the quality of products is necessary to use complex industrial innovation, product and managerial type. Necessary optimal planning quality and volume of grain to avoid imbalances in the grain market. To increase the competitiveness of producers of grain crops in Ukraine requires the use of industrial innovation, product and managerial nature. These include: renewal, modernization and technical re-equipment of logistics; transition to ecological production technology intensive crops; the use of new varieties and hybrids; new methods of sales; expand sales market both in Ukraine and abroad.

**Keywords:** producers of grain crops, grain, innovation, competitiveness, planning activities, the quality of products.

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### ***The basic functions of management of agricultural enterprises of the grain subcomplex in modern conditions of farming (p. 109–113)***

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The article substantiates the concept and essence of management functions. The basic approaches to the classification of the functions of management of agricultural enterprises, which give the opportunity to achieve the aims of the enterprises and increase their incomes. Attention is made to the features of the classification of the functions of management. The content is

revealed and the basic management functions of agricultural were classified enterprises they are the holistic basis for improving the efficiency of its work.

In the modern economy there are many views and opinions concerning the functions of corporate governance, integrity and compliance. On the basis of the studying, summarizing the achievements of ukrainian and foreign scientists, the author systematizes the existing classification. The foundations of governmental functions the management of an agricultural enterprise include: an integradiation-monitoring function, which is to establish effective partnership in the triangle "breeder seed enterprise goods producer of grain subcomplex"; an adaptive function, which ensures the production of seeds according to the needs and specialization of consumers and standards market; an innovation and the information function of receiving and dissemination of information on new hybrids and seed varieties, the technology of its cultivation; a production-economical function, which determines the optimization of lands use, technical, manpower and working capital, modernization and diversification of production; an economic and financial function that is responsible for the stabilization and growth of quantitative indicators of seed company; a supervisory function, which involves a continuous process of monitoring grain production before and after harvesting to determine the degree of efficiency and product quality, resulting, if necessary, to address regulatory measures; an ecological function that results from the need of environmental protection and the compliance with environmental quality standards of grain products.

**Keywords:** management, management functions, economical efficiency, agricultural enterprises, management mechanism, classification, the functional dutes, motivation, planning.

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**Optimization model for production plan of field vegetables (p. 114–117)**

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The development of olericulture and stable providing the population in enough qualitative vegetables require the formation of mechanisms of cost management and optimization for the production plans, adequate to modern conditions. The ability to efficiently manage costs in periods of worsening market conditions increases the chances of enterprise survival and growing profits. Therefore, rationally organized and effectively managed process of cost management is the key to its effective activity.

First of all, the executives of LLC “VPK-AGRO” are aimed at increasing crop yields and maximizing profits that can be achieved by optimizing the plan of cultivation of field vegetables. The proposed optimization model for production plan of field vegetables consists of linear formulas and restrictions concerning the capacity of the annual product portfolio and the maximal quantity of vegetable crops for the analyzed period.

After computer calculations by means of tools of spreadsheet LibreOffice Calc LLC “VPK-AGRO” got recommendations to take into account three alternatives of market development, namely, parity, strengthened and weakened disparity of prices. In case of parity between the vegetable prices and production costs, we recommend to strengthen the enterprise's specialization by consistently narrowing assortment portfolio from 4 to 2 types of vegetables. Following the specified crop rotation, the enterprise will receive 50063 UAH per 1 hectare of vegetable crops for 3-year production cycle. In case of the weakened disparity between the vegetable prices and production costs, it is preferable to stabilize assortment list at the level of 3 types of field vegetables. It will result in providing 41581 UAH per 1 hectare of vegetable crops for 3-year production cycle. In case of the strengthened disparity between the vegetable prices and production costs, it is expedient to strengthen the diversification of vegetable production by consistent expansion of assortment portfolio from 2 to 4 products. Following this plan, the enterprise will receive 41296 UAH per 1 hectare of vegetable crops for 3-year production cycle. At any level of prices and production costs we offer LLC “VPK-AGRO” to abandon cultivation of less profitable vegetables – table beet and carrot. By contrast, we advise adding to its assortment more profitable products such as garlic which provide an income over 80000 UAH per 1 hectare of vegetable crops.

## ABSTRACTS. REFERENCES. KEYWORDS

**Keywords:** field vegetables, assortment portfolio, cost management, diversification of production, economic and mathematical model, parity and disparity of prices.

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**The application of nonlinear neuron networks for modeling grain sorghum yields under conditions of the Southern Ukrainian Steppe. (p. 118–123)**

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At present the problem of applying artificial neuron networks for modeling and forecasting crop

yields is important but not investigated properly. The most powerful and efficient methods of nonlinear modeling and forecasting of the processes and phenomena under study are artificial neuron networks (ANN).

According to the research results (2013–2015) we have created a multiple regression model of the yield formation of grain sorghum hybrids depending on four factors (climatic conditions, sowing times, hybrid composition and crop stand density). The results show, that the variation of the standard deviation index of the yield depends mainly on the climatic conditions of the year and the sowing time, and it depends less on the hybrid composition and the crop stand density.

The multiple correlation considering nonlinear regularities of the impact of the factors on the yields of grain sorghum hybrids was 0,86. Having estimated the sensitivity of the neuron networks we ranked the factors on the impact of the yield dynamics of grain sorghum hybrids: the first place – the sowing time, the impact coefficient is 4,94; the second place – the years of the research (climatic conditions) – 3,15; the third place – the hybrid – 1,38; the fourth place – the crop stand density – 1,22, these data prove the availability of nonlinear regularities of the yield formation of grain sorghum hybrids and validate the results of dispersion analysis and regression modeling.

**Keywords:** sorghum hybrids, yield, sowing time, crop stand density, neuron networks, modeling.

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### **Structure of capital investment in agriculture of Ukraine and the main sources of their formation (p. 124–129)**

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Agricultural producers constantly have a questions about fundraising of economic activities, the reserves of logistical support update. Now economic entities of the industry significantly experiencing an acute shortage of financial resources. Therefore, for the effective development of the agricultural sector requires a significant investment of resources.

For agricultural producers more valuable is capital investments, which is the cost of creating new ones, as well as expansion, reconstruction and modernization of the existing fixed assets of agricultural enterprises. Due to the investments made as the recovery of written-off and obsolete fixed assets and the acquisition of additional means of labor necessary for extended reproduction. This article analyzes the current state of the dynamics and structure of capital investments in agrarian sector of economy of Ukraine. It describes the main sources of their formation in 2010–2014. Explore ways to use capital investments in agriculture and basic directions of investment support to agricultural producers.

The study found that for the majority of domestic agricultural enterprises of the main and often only source of investments are own funds (depreciation and profit), while for reliable financial support is essential to use the raised funds, funds of state and local budgets. Just can actually form the strong macroeconomic performance, with appropriate state support for agriculture.

**Keywords:** investments, structure of capital investments, agriculture, crops, livestock, material and technical base, the main sources of investment.

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### **Information technology optimization calculation of economic parameters crop (p. 130–135)**

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Nowadays crop and agriculture need every support. The use of computer technology in all sectors of the economy has confirmed its feasibility. Optimization parameters calculation crop - is no exception. In the article the application of mathematical tools in the processing results of a calculation that has not been used before.

When writing articles collected and processed factual data regarding crop development in Ukraine. Research material concerning optimization of parameters calculated actions using computer technology. For the calculations used in computer technology software purpose for which you want to customize the input of the actual material. In vzyemodiyi System Utilities - Plant used a series of design parameters. When calculating some parameters optimization of crop may get a significant economic effect.

We consider accounting basic parameters and characteristics of the average cost of crop steppe zone of Ukraine based on indicators involved in the development of productive resources in view of the development of crop size reclamation areas, operational optimization mode of irrigation, crop pattern and pastures; availability and number of objects production fauna distinguishing between commercial buildings and machinery, agricultural services in general.

## ABSTRACTS. REFERENCES. KEYWORDS

The place and role of modern information technology in the automation of computing to reduce the cost of keeping some parameters of modern agricultural crop farms Ukraine.

**Keywords:** reclamation area, the structure of sown areas, the parameters of crop production costs, cost accounting, mode of irrigation of sown areas, land use, agricultural services, farmers.

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